NASA Procedural Requirements

NPR 7120.5D
Effective Date: March 06, 2007
Expiration Date: March 06, 2012

COMPLIANCE IS MANDATORY

Printable Format (PDF)

[Request Notification of Change] (NASA Only)

Subject: NASA Space Flight Program and Project Management Requirements

Responsible Office: Office of the Chief Engineer

CHAPTER 3. Program and Project Management Roles and Responsibilities

3.1 Overview of Roles and Responsibilities

3.1.1 This chapter defines the roles and responsibilities of the key officials in the program/ project management process. Terms such as *approval* and *concurrence*, used in connection with these roles and responsibilities, are defined in Appendix A.

3.1.2 The roles and responsibilities of senior NASA management, along with fundamental principles of governance, are defined in NPD 1000.0, the *NASA Strategic Management and Governance Handbook*, and further outlined in NPD 1000.3, *The NASA Organization*. The key roles and responsibilities specific to program and projects consistent with NPD 1000.0 can be summarized as follows:

a. NASA Administrator - approves assignment of programs and Category 1 projects to Centers.

b. NASA Associate Administrator - is responsible for the technical and programmatic integration of programs at the Agency level, chairing the Agency PMC, serving as KDP Decision Authority for programs and Category 1 projects, and approving the PCA.

c. Associate Administrator, PA&E - is responsible for independent assessment of programs, Category 1 and 2 projects, and other projects as assigned in the areas of cost and management systems; conducting special studies; developing the Agency's Annual Performance Plans and Strategic Plan; and providing strategic guidance recommendations.

d. Chief Engineer - establishes policy, oversight, and assessment of the NASA engineering and program/project management process; implements the engineering technical authority process; serves as principal advisor to the Administrator and other senior officials on matters pertaining to the technical capability and readiness of NASA programs and projects to execute according to plans; directs the NASA Engineering and Safety Center (NESC), and directs programs/projects to respond to requests from the NESC for data and information needed to make independent technical assessments and to respond to these assessments.

e. Chief Safety and Mission Assurance Officer - assures the existence of robust safety and mission assurance processes and activities through the development, implementation, assessment, and functional oversight of Agency-wide safety, reliability, maintainability, and quality policies and procedures; serves as principal advisor to the Administrator and other senior officials on Agency-wide safety, reliability, maintainability, and quality assurance matters; performs independent program and project compliance verification audits; and implements the SMA technical authority process.

f. Chief Health and Medical Officer - establishes policy, oversight, and assessment on all health and medical matters associated with NASA missions and is responsible for implementation of medical/health technical authority process; serves as principal advisor to the Administrator and other senior officials on health and medical issues related to the Agency workforce.

g. Chief Financial Officer - is responsible for ensuring that financial records and reports accurately reflect the status of all program and project capital acquisitions, including property, plant, and equipment (PP&E), and for the necessary controls to support such activities.

h. Mission Directorate Associate Administrator - is primarily responsible for managing programs within the Mission Directorate; recommends the assignment of programs and Category 1 projects to Centers; assigns Category 2 and 3 projects to Centers; serves as the KDP Decision Authority for Category 2 and 3 projects; and has responsibility for all program requirements, including budgets, schedules, and the high-level programmatic requirements levied on projects within the Mission Directorate. The MDAA may designate a Program Director or Program Executive to support the MDAA and the Program Manager in defining, integrating, and assessing program/project activities and to provide policy direction and guidance to the program/project.

i. Center Director - is responsible for establishing, developing, and maintaining the institutional capabilities (processes and procedures, human capital, facilities, and infrastructure) required for the execution of programs and projects, including the system of checks and balances to ensure the technical integrity of programs and projects assigned to the Center.

j. Program Manager - is responsible for the formulation and implementation of the program per the governing agreement with the sponsoring Mission Directorate.

k. Project Manager - is responsible for the formulation and implementation of the project per the governing agreement with the Program Manager.

l. Mission Support Office Assistant Administrators - establish policy and procedures for the oversight and assessment of their particular functional area (e.g., procurement).

3.1.3 The Project Manager reports to the Program Manager and both are supported by one or more NASA Centers (with facilities and experts from line or functional organizations). Each, however, is responsible and accountable for the safety, technical integrity, performance, and mission success of the program or project, while also meeting programmatic (cost and schedule) commitments. Accomplishing this requires a breadth of skills, so he/she must be knowledgeable about governing laws, acquisition regulations, policies affecting program and project safety, training of direct-report personnel, risk management, environmental management, resource management, program and project-unique test facilities, software management, responding to external requests for audits (e.g., OMB), protecting intellectual property and technology, and other aspects of program and project management.

3.2 Specific Roles and Responsibilities

3.2.1 Table 3-1, Roles and Responsibilities Relationships Matrix, provides a summary of the roles and responsibilities for the key program/project management officials. The table is informational only and is not intended to specify, levy, or remove requirements. As such, implementation of the specific roles and responsibilities is determined on a case-by-case basis and is documented in the Program or Project Plan.

Table 3-1 is not available in the .PDF file.

* Centers may use an equivalent term for these positions, such as Program/Project Systems Engineer.

Table 3-1 Roles and Responsibilities Relationships Matrix

3.2.2 It is important for the Program Manager and Project Manager to coordinate early and throughout the project life cycle with mission support organizations at NASA Headquarters and the implementing Centers. These mission support organizations include legal, procurement, security, finance, export control, human resources, public affairs, international affairs, property, facilities, environmental, aircraft operations, IT security, planetary protection, and others. They provide essential expertise and assure compliance with relevant laws, treaties, executive orders, and regulations.

3.3 Process for Handling Dissenting Opinions

3.3.1 NASA teams must have full and open discussions with all facts made available in order to understand and assess issues. Diverse views are to be fostered and respected in an environment of integrity and trust with no

suppression or retribution.

3.3.2 Unresolved issues of any nature (e.g., programmatic, safety, engineering, acquisition, accounting, etc.) within a team should be quickly elevated to achieve resolution at the appropriate level. At the discretion of the dissenting person(s), a decision may be appealed to the next higher level of management for resolution. Dissenting opinions raised by a Technical Authority (TA) are handled by the process set forth in Section 3.4.

3.3.3 When appropriate, the concern is documented by including agreed-to facts, discussion of the differing positions with rationale and impacts and the parties recommendations, approved by the representative of each view, concurred by affected parties, and provided to program/project management and the appropriate TA with notification to the second higher level of management. In cases of urgency, an oral presentation (including the information stated above) with all affected organizations in attendance and with advance notification to the second higher level of management may be utilized with documentation follow-up.

3.3.4 Management's decision/action on the memorandum (or oral presentation) is documented and provided to the dissenter and to the notified managers and becomes part of the program/project record. If the dissenter is not satisfied with the process or outcome, the dissenter may appeal to the next higher level of management. The dissenter has the right to take the issue upward in the organization, even to the NASA Administrator, if necessary.

3.4 Technical Authority

3.4.1 The NASA governance model prescribes a management structure that employs checks and balances between key organizations to ensure that decisions have the benefit of different points of view and are not made in isolation. Consequently, NASA has adopted two basic authority processes: the *programmatic authority process* and the *technical authority process*. The programmatic authority process is largely described by the roles and responsibilities of the NASA AA, MDAAs, and program and project managers in Sections 3.1 and 3.2. This section describes the technical authority process.

3.4.1.1 The technical authority process provides for the selection of individuals at different levels of responsibility who provide an independent view of matters within their respective areas of expertise. In this document, the term Technical Authority is used to refer to such an individual, but is also used (without capitalization) to refer to elements of the technical authority process. There are three distinct types of Technical Authorities (TAs): Engineering TAs, SMA TAs, and Health and Medical TAs, each of whom is discussed in this section. A key aspect of the technical authority process is that the TAs are funded independently of the program/project. In the technical authority process, their responsibilities include:

a. Approving changes to, and waivers of all TA-owned requirements. The TA is responsible for assuring that changes to and waivers of technical requirements are submitted to and acted on by the appropriate level of TA.

b. Serving as members of program/project control boards, change boards, and internal review boards.

3.4.1.2 The day-to-day involvement of the TAs in program/project activities as members of the program/project's control, change, and internal review boards should ensure that any significant views from TAs will be available to the program/project in a timely manner and should be handled during the normal program/project processes. The ultimate responsibility for program/project success in conformance with governing requirements remains the responsibility of the Program/Project Manager.

3.4.1.3 Infrequent circumstances may arise when a Technical Authority or the Program/Project Manager may disagree on a proposed programmatic or technical action and judge that the issue rises to a level of significance that the next higher level of management should be involved. In such circumstances:

a. The Program/Project Manager (or Chair of the controlling board) has the authority to make a decision while resolution is attempted at the next higher level of Programmatic and Technical Authority.

b. Resolution should occur prior to implementation whenever possible. However, the Program/Project Manager may proceed at risk in parallel with pursuit of resolution if they deem it in the best interest of the program/project. In such circumstances, the next higher level of Programmatic and Technical Authority would be informed of the decision to proceed at risk.

c. Resolution should be attempted at successively higher levels of Programmatic Authority and Technical Authority until resolved. Final appeals are made to the Office of the Administrator.

3.4.2 The *Engineering Technical Authority* establishes and is responsible for the engineering design processes, specifications, rules, best practices, etc., necessary to fulfill programmatic mission performance requirements.

Engineering technical authority responsibilities originate with the NASA Administrator and are formally delegated to the NASA Chief Engineer. Specific engineering technical authority responsibilities may then be formally delegated from the NASA Chief Engineer to Center, program, project, and system-level Engineering Technical Authorities.

3.4.2.1 The NASA Chief Engineer provides overall leadership of the engineering technical authority process for space flight programs/projects, including Agency engineering policy direction, requirements, and standards. The NASA Chief Engineer approves the appointment of the Center Engineering Directors (or equivalent) and of Engineering Technical Authorities on programs and Category 1 projects and is notified of the appointment of other Engineering Technical Authorities. The NASA Chief Engineer hears appeals of the Engineering Technical Authority's decisions when they cannot be resolved at lower levels.

3.4.2.2 The Center Director (or designee) develops the Center's engineering technical authority policies and practices, consistent with Agency policies and standards. The following individuals are responsible for implementing engineering technical authority at the Center:

a. Center Director (CD) - The CD (or the Center Engineering Director, or designee) is the Center Engineering Technical Authority responsible for Center engineering design processes, specifications, rules, best practices, etc., necessary to fulfill mission performance requirements for projects or major systems implemented by the Center. (The CD may delegate Center engineering technical authority implementation responsibility to an individual in the Center' engineering leadership.) The Center Engineering Technical Authority approves waivers and changes in Center requirements. The CD appoints, with the approval of the NASA Chief Engineer, individuals for the position of Center Engineering Director (or equivalent) and for the Engineering Technical Authority positions down to and including Program Chief Engineers and Category 1 Project Chief Engineers (or equivalents)[15] The CD appoints Category 2 and 3 Project Chief Engineers and Lead Discipline Engineers. (On some programs and projects, the program- and project-level Engineering Technical Authority may also serve as the program/project Systems Engineering Manager or Systems Engineering and Integration Manager; in these instances, the Program/Project Manager concurs on the appointment of the Engineering Technical Authorities.)

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[15] Centers may use an equivalent term for these positions, such as Program/Project Systems Engineer.

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b. Program/Project Chief Engineer (PCE) - The PCE (or equivalent as per footnote below) is the Engineering Technical Authority for the program/project and is the single point of contact for the engineering technical authority process within the program/project. In executing this role, the PCE works with the Center Engineering Director(s) (or designees), as necessary, to ensure the engineering technical authority direction provided to the program/project reflects the view of the Center engineering community (or NASA engineering community, where appropriate). When there are disagreements between the PCE and the engineering community, resolution is sought at the next higher level of the Center Engineering Technical Authority in accordance with Section 3.3. To ensure independence, the PCE is assigned to the program/project, but is organizationally in the Center Engineering Directorate. The PCE is responsible for assuring that changes to, and waivers of, engineering requirements are submitted to, and acted upon by, the appropriate level of Engineering Technical Authority. At the level of delegated engineering technical authority responsibility, the PCE serves as a member of program/project control boards/change boards (or equivalent), and thereby concurs in the establishment of changes to, and waivers of, engineering requirements at this level. The PCE also serves as a member of internal review boards at the level of delegated engineering technical authority responsibility.

c. Lead Discipline Engineer (LDE) - The LDE is a senior technical engineer in a specific discipline who is designated as the Engineering Technical Authority for that discipline at the Center. To ensure independence, the LDE is organizationally separate from the program/project. The LDE assists the program/project through direct involvement with working-level engineers to identify engineering requirements and develop solutions that comply with the requirements. The LDE works through and with the PCE to ensure the proper application and management of discipline-specific engineering requirements and Agency standards.;

3.4.2.3 Although a limited number of individuals make up the Engineering Technical Authorities, their work is enabled by the contributions of the program/project's working-level engineers and other supporting personnel (e.g., contracting officers).The working-level engineers are funded by the program/project and consequently may not serve in an Engineering Technical Authority capacity. These engineers perform the detailed engineering and analysis for the program/project, with guidance from their Center management and/or LDEs and support from the Center engineering infrastructure. They deliver the program/project hardware/software that conforms to applicable programmatic, Agency, and Center requirements. They are responsible for raising issues to the Program/Project Manager, Center engineering management, and/or the PCE, as appropriate, and are a key resource for resolving these issues.

3.4.3 The *SMA Technical Authority* establishes and is responsible for the SMA design processes, specifications, rules, best practices, etc., necessary to fulfill programmatic mission performance requirements.

3.4.3.1 For tightly coupled programs, SMA Technical Authority starts with the NASA Chief SMA Officer and flows to the Center SMA Director and Chief Safety Officer. For other programs, SMA Technical Authority starts with the NASA Chief SMA Officer and flows down to the Center SMA Director, and then to the Program SMA Lead. For projects, SMA Technical Authority originates with the NASA Chief SMA Officer and flows down to the Center Director, and then to the Center SMA Director, and from there, to the Project SMA Lead. To ensure independence, SMA Technical Authority personnel are organizationally separate from the program/project.

3.4.3.2 The Center SMA Director is responsible for establishing and maintaining institutional SMA policies and practices, consistent with Agency policies and standards. The Center SMA Director is also responsible for assuring that the program/project complies with both the program/project and Center SMA requirements. The program/project SMA Plan, which describes how the program/project will comply with these requirements, is part of the Program/Project Plan.

3.4.4 The *Health and Medical Technical Authority* is the NASA Chief Health and Medical Officer (CHMO).The Center Chief Medical Officer is responsible for assuring that the program/project complies with health and medical requirements through the process specified in the Center Health and Medical Authority (HMA) implementation plan, which is compliant with NPD 8900.5, *NASA Health and Medical Policy for Human Space Flight Exploration*, and NID, NM 1240-41, *NASA Health and Medical Authority*. The CHMO hears appeals of HMA decisions when issues cannot be resolved below the Agency level.

3.4.5 Program/project internal control boards, change boards, and review boards (or their equivalents) are fundamental to program/project management. These boards comply with the following:

a. The Program/Project Manager (or formally designated representative) chairs each board.

b. The Technical Authorities (engineering, SMA and, where appropriate, health and medical) are represented on the boards.

3.5 Center Reimbursable Work

3.5.1 A Center negotiating reimbursable work for another agency must propose NPR 7120.5D as the basis by which it will perform the work. If the sponsoring agency does not want NPR 7120.5D requirements (or a subset of those requirements) to be followed, then the inter-agency MOU/MOA or the contract must explicitly identify those requirements that will not be followed, along with the substitute requirements for equivalent processes and any additional program/project management requirements the sponsoring agency wants. The Center must obtain a formal waiver by the NASA CE for those NPR 7120.5D requirements that are not to be followed, or the Agency will direct the Center not to accept the work.

3.6 Waiver Approval Authority

3.6.1 Waivers to NPR 7120.5D requirements may be granted by the officials shown in Table 3-2.

Legend	R Recommends	A Approves	I Informed			

	Project Manager	Program Manager	Center Director	MDAA	Chief Engineer	NASA AA	Approval Authority for Waiver with Dissent
Programs (except tightly coupled programs)		R	A	A	A	I	NASA AA
Programs (tightly coupled programs)		R		A	A	I	NASA AA
Category 1 Project	R	A	A	A	A	I	NASA AA
Category 2 and 3 Projects	R	A	A	A	A	I	NASA AA
Reimbursable Space Flight Projects	R		A	A*	A	I	NASA AA

* As Applicable

Table 3-2 Waiver Approval for Programs and Projects

3.6.2 Requests for waivers to NPR 7120.5D requirements are documented and submitted for approval using the NPR 7120.5D Waiver Form below. (The form is available electronically on the POLARIS website at https://polaris.nasa https://polaris.nasa.gov.) Prior to the KPD I for programs (KDP II for single-project programs) and KDP C for projects, these requests may be documented and attached to a single waiver to assure proper routing and control. Waivers impacting formulation or requiring long lead time may be submitted individually early in formulation. Following KDP I

for programs (KDP II for single-project programs) and KDP C for projects, waivers must be submitted individually to the appropriate authority.

3.6.3 Evaluation and disposition of all other requirements change requests and waivers (including waivers of Agency-level requirements and standards) must comply with the following:

a. The organizations and the organizational levels that agreed to the establishment of a requirement must agree to the change or waiver of that requirement, unless this has been formally delegated elsewhere.

b. The next higher programmatic authority and Technical Authority are informed in a timely manner of change requests or waivers that could affect that level.

NPR 7120.5D Waiver Form

Name of Program or Project Requesting Waiver:	Date of Request:	Date Waiver is Needed:
Name and Organization of Initiator :	Requirement to be Waived:	
Project Deliverable Affected: ☐ None ☐ Ground ☐ Flight ☐ Software ☐ Other (specify)	Waiver To: ☐ Policy ☐ Procedure ☐ Requirement ☐ Other ☐ Additional information is attached	
Original Requirement of Document to be Waived (list Appropriate Sections or Text):		
Waiver Requested:		
Reason/Justification (Attach additional information, if necessary):		
Risk Assessment of the Program and Project if Waiver is Approved:		

Required Signatures	Signature	Date	Approved (Yes/No)
Project Manager			
Program Manager			
Center Director			
Mission Directorate AA			
NASA Chief Engineer			

NASA AA (if required)			

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